(No Model.) 2 Sheets—Sheet 1.

R. MIEHLE.

INKING APPARATUS FOR PRINTING PRESSES.

No. 559,036. Patented Apr. 28, 1896.

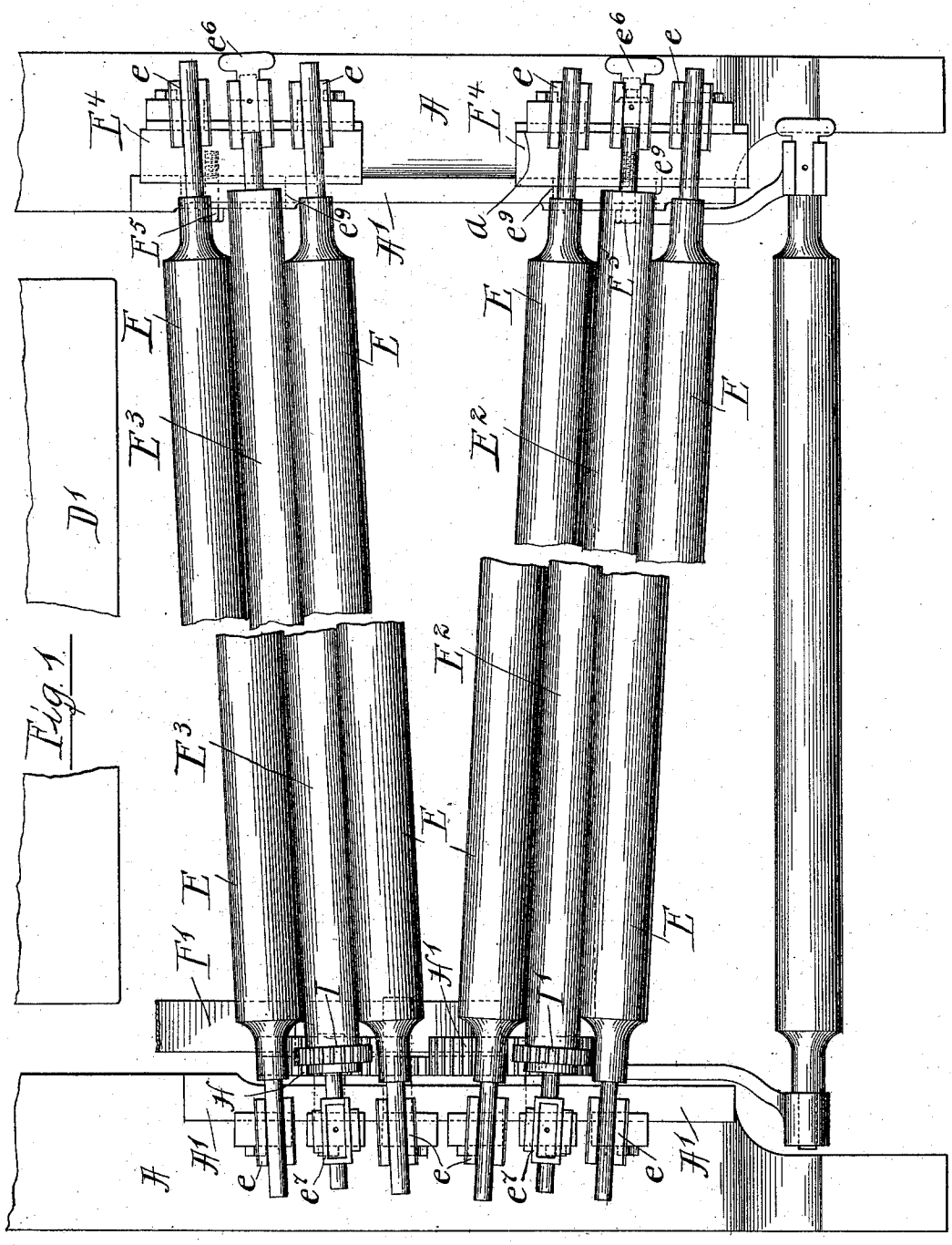

Fig. 1.

Witnesses.
Jno. W. Adams.
Clinton Hamlink

Inventor:-
Robert Miehle.
by:- Dayton, Poole & Brown
his Attorneys.

ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D.C.

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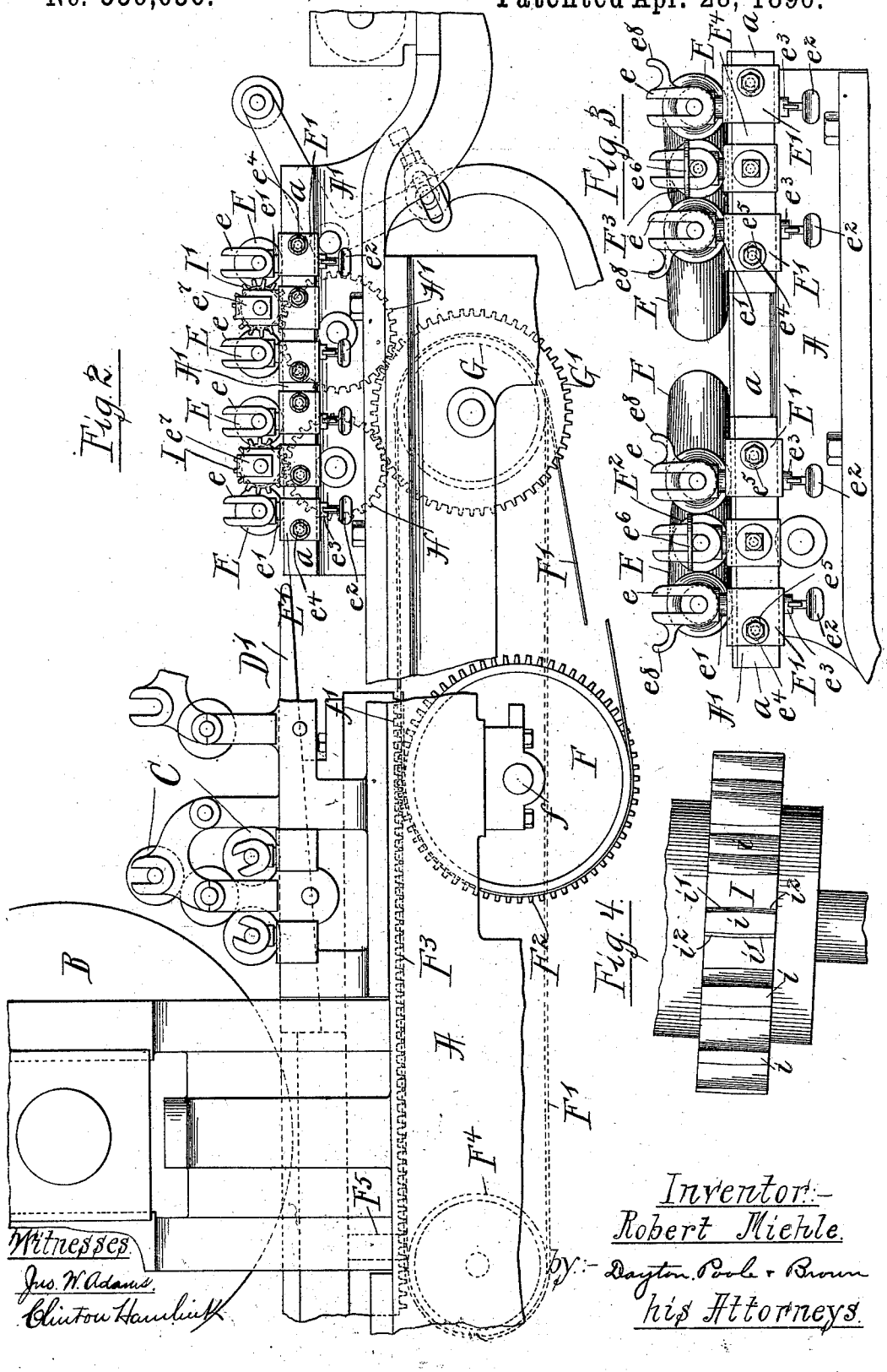

Fig. 2.

Fig. 3.

Fig. 4.

Witnesses.
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Inventor:-
Robert Miehle.
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UNITED STATES PATENT OFFICE.

ROBERT MIEHLE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE MIEHLE PRINTING PRESS AND MANUFACTURING COMPANY, OF SAME PLACE.

INKING APPARATUS FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 559,036, dated April 28, 1896.

Application filed August 16, 1894. Serial No. 520,452. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MIEHLE, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Inking Apparatus for Printing-Presses; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to printing-presses, and more specifically to inking apparatus therefor, and has for its object to provide an improved mechanism for distributing ink on the ink-table.

In a prior application for patent filed by me in the United States Patent Office June 26, 1891, Serial No. 397,607, I have shown an inking apparatus having the same general features of construction as that herein shown, the particular object of the present invention being to provide a construction embodying improvements upon the general features set forth in said prior application.

The invention consists in the matters hereinafter described, and particularly pointed out in the appended claim, and will be readily understood, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of part of the frame of a printing-press embodying my invention, showing the arrangement of the ink-distributing rollers thereon. Fig. 2 is a side elevation of the frame of the press, the central portion thereof being broken out to shorten the view, showing the arrangement of the ink-distributing and form rollers. Fig. 3 is a view of the opposite end of the ink-distributing rollers from that shown in Fig. 2. Fig. 4 is an enlarged detail of the gear-wheel of one of said distributing-rollers.

As shown in said drawings, A designates the frame of the machine, B the impression-cylinder, and C the form-rollers, all of which may be of any approved construction and desired arrangement.

D designates the type-bed, which is reciprocated beneath the impression-cylinder in the usual manner, and D′ the ink-table carried by the type-bed D, of which it forms an extension. Near the end of the machine-frame A, remote from the cylinder B, are located the distributing-rollers E, in this instance four in number, which serve the purpose of distributing the ink equally over the surface of the ink-table. In said prior application, hereinbefore referred to, are shown a similar set of distributing-rollers, said rollers being there, as well as in the present instance, shown as arranged at an inclination to a line perpendicular to the line of travel of the bed. In the former instance, however, the said rollers, comprising both sets, are arranged to be driven at an equal speed either by means of a belt directly engaging cylindric surfaces at the end of the rollers or by means of a beveled gear-wheel intermeshing with a corresponding pinion secured upon the end of each of the two driving-rollers. In the present instance the actuation of the two distributing-rollers is accomplished in a different and improved manner, as will appear from the following description.

Each of the two ink-distributing rollers E is mounted at its ends in a U-shaped bearing *e*, which is provided with a cylindric shank *e′*, swiveled in a suitable socket formed in a supporting-block E′. An adjusting or thumb screw e^2, provided with a lock-nut e^3, extends vertically through the bottom of said block E′ and engages the lower end of the cylindric shank of the U-shaped bearing *e* and serves to secure vertical adjustment of the bearing-pin *e′*. The blocks E′ at one side of the press are mounted on guideways *a*, formed on the outside of sliding blocks E^4, mounted on the top rail A′ of the frame A, and are held thereon by means of bolts e^4, passing through horizontally-arranged slots e^5, formed in said supporting-blocks E′, and a bolt-aperture formed in the said sliding block E^4. The blocks E′ at the opposite side of the press are similarly mounted directly upon the top rail A′, thus providing for longitudinal adjustment of said bearing-blocks with relation to each other, and correspondingly of the U-shaped bearing carried thereby. This arrangement of the

distributing-rollers permits the latter to be accurately adjusted with relation to the driving-rollers E^2 E^3, hereinafter described, to insure proper contact between said rollers. The carriage-blocks E^4 are secured so as to be adjustable as a whole upon the top rail A′ by means of a bolt E^5, passed through a slot e^9, formed longitudinally in said top rail and tapped into a corresponding bolt-aperture in the block E^4. By means of this adjustment each set of rollers may be brought to any desired angle with the ink-table without disturbing their relation to each other. The said distributing-rollers E are shown as arranged in two sets of two each, each set being arranged at opposite angles of inclination to the line of travel of the type-bed, and said distributing-rollers are driven by frictional contact with the driving-rollers E^2 E^3, which are arranged one between the distributing-rollers of each pair. Said driving-rollers E^2 E^3 are mounted in bearings generally similar to those of the ink-distributing rollers, the adjusting-screws being omitted as unnecessary, however, and the trunnions of the said distributing-roller being held from rising in their bearings at one end by flat keys e^6, sliding in grooves formed in the U-shaped bearings above said trunnions, and at the other end by lubricating-boxes e^7, in which they are inclosed, as clearly shown in Fig. 1. The driving-rollers are herein shown as made somewhat smaller in diameter than the distributing-rollers, and they are preferably arranged with their axes in a plane below the plane of the axes of the distributing-rollers, but far enough above the ink-table to avoid coming in contact therewith. Supports e^8 e^8 are provided at the sides of the bearings *e e*, in which the trunnions of the rollers may rest when lifted out of their bearings, so that the distributing-rollers may be supported free from contact with the ink-table or the driving-rollers when the machine is not in use.

F is a belt-pulley mounted upon a shaft *f*, and G a second pulley mounted in bearings upon the frame A at a point intermediate of the two sets of ink-distributing rollers and some distance below the latter. A belt F′ is trained over the pulleys F and G, and rotary motion may be given to the said pulley F by any suitable means, but preferably, and as herein shown, by a pinion F^2, secured upon the shaft *f* and arranged to intermesh with a rack F^3, arranged longitudinally upon the bed of the press. Rotary motion, first in one direction and then in the other, is thus given to the said pulley G. Secured to said pulley G, and preferably formed integral therewith, is a gear-wheel G′. With this gear-wheel G′ intermesh two other gears H H′, mounted in bearings upon the upper rail A′, beneath each pair of distributing-rollers, and these latter gears intermesh with and communicate motion to two other gears I I′, secured upon the ends of the driving-rollers E^2. The gears G′, H, and H′ are all herein shown as ordinary straight-toothed gears of the usual construction; but in order to provide for the angular arrangement of the said driving-rollers the gears I I′ are of peculiar construction, as shown more clearly in Fig. 4. For the purpose stated each gear-tooth *i* of the gear I has an inclined or beveled portion *i′*, formed at a proper angle to mesh accurately with the straight teeth of the connecting-gear H, while each tooth *i* of the gear I′ has an inclined or beveled portion i^2, corresponding with the angle of the driving-roller meshing with the gear H′. As herein shown and as preferably made, the teeth of the gears I and I′ are provided with bevels *i′* i^2, so that the driving-rollers are interchangeable and may be used in connection with either set of bearings E. This is a feature of considerable importance, for the reason that it enables the rollers to be interchanged. The beveling of the pinion-teeth in the manner described also enables the angle of the distributing-rollers to be changed at will, the pinions operating equally well at any intermediate angle between the extreme angles for which the teeth are designed.

The relative size of the elements by which motion is communicated to the driving-rollers is such that the pairs of distributing-rollers E E driven by rollers E^2 E^3 are driven at a peripheral speed about equal to the surface speed of the inking-table. By this arrangement all torsional strain on the rollers which would be caused by any difference between the peripheral speed of the inking-rollers and the surface of the ink-table is prevented, and the rollers are subjected only to the strain due to direct bearing upon the surface of the table, or, in other words, to radial compression, thus prolonging the life of the roller greatly. As a modified means of communicating motion to the said belt F′ and thus to the train of gears, in Fig. 2 I have shown in dotted lines an idle-pulley over which the belt F′ may be trained, and the end of an arm F^5, extending out from the bed of the press and engaging said belt. When this construction is employed, the rack and pinion and pulley F will of course be dispensed with. It will be obvious that with this construction the same result will be obtained with a somewhat less number of parts.

I claim as my invention—

The combination with an ink-table of a distributing-roller arranged at an angle with the ink-table, an angularly-arranged driving-roller located in contact with the distributing-roller, said driving-roller being provided with a gear-pinion, pivotally-mounted and laterally-adjustable bearings for said driving-roller and a gear-wheel for giving motion to said driving-roller, located beneath the gear-pinion of the driving-roller, and mount-

ed to rotate on an axis at right angles with the path of the bed and in the same vertical plane with the pivot of the bearing at the adjacent end of the driving-roller, the teeth of said gear-pinion being beveled in opposite directions from the center line of the teeth at their side or contact faces, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

ROBERT MIEHLE.

Witnesses:
C. CLARENCE POOLE,
WM. S. HALL.